

USER'S GUIDE

CFETF1029-2xx

Slide-in-Module Media Converter

- **Fast Ethernet™**
- **Copper to Fiber**
- **100Base-TX to 100Base-FX**

Transition Networks CFETF1029-2xx series Fast Ethernet™ 100Base-TX to 100Base-FX Media Converters (designed to be installed in a *PointSystem™* chassis) connect 100Base-TX twisted-pair copper cable to single fiber 100Base-FX fiber-optic cable.

NOTE:

CFETF1029-205 and CFETF1029-206 are intended to be installed together.
CFETF1029-207 and CFETF1029-208 are intended to be installed together.
CFETF1029-209 and CFETF1029-210 are intended to be installed together.

Part Number	Port One - Copper 100Base-TX	Port Two - Simplex Fiber-Optic 100Base-FX
CFETF1029-205	RJ-45 100 m (328 ft)*	SC, 1310 nm (TX), 1550 (RX)** 20 km (12.4 miles)*
CFETF1029-206	RJ-45 100 m (328 ft)*	SC, 1550 nm (TX), 1310 (RX)** 20 km (12.4 miles)*
CFETF1029-207	RJ-45 100 m (328 ft)*	SC, 1310 nm (TX), 1550 (RX)** 40 km (24.9 miles)*
CFETF1029-208	RJ-45 100 m (328 ft)*	SC, 1550 nm (TX), 1310 (RX)** 40 km (24.9 miles)*
CFETF1029-209	RJ-45 100 m (328 ft)*	SC, 1310 nm (TX), 1550 (RX)** 60 km (37.3 miles)*
CFETF1029-210	RJ-45 100 m (328 ft)*	SC, 1550 nm (TX), 1310 (RX)** 60 km (37.3 miles)*

* Typical maximum cable distance. (Actual distance is dependent upon the physical characteristics of the network installation.)

** TX = transmit, RX = receive

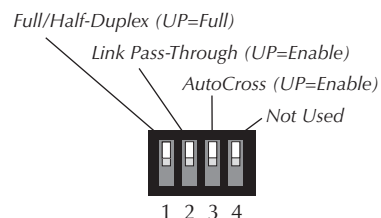
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INSTALLATION

CAUTION: Wear a grounding device and observe electrostatic discharge precautions when setting the 4-position switch and the jumpers and when installing the Slide-in-Module Media Converter. Failure to observe this caution could result in damage to, and subsequent failure of, the Media Converter.

Set the 4-Position Switch

The 4-position switch is located on the Media Converter circuit board. Use a small flatblade screwdriver or a similar device to set the recessed switches. Refer to the drawing to the right for the locations of the four individual switches.



1. Full- / Half-Duplex

- UP Advertsises 100 Mb/s Full-Duplex (only during Auto-Negotiation). (See page 5.)
- DOWN Operates at 100 Mb/s in Half-Duplex mode of the attached device. (Used primarily when connecting to a hub).

2. Pause

(Applies **ONLY** if switch 1 is UP (Full-Duplex) **AND** the Media Converter is connected to Auto-Negotiation device(s) capable of Pause Control Frame.)

- UP Allows negotiation of Pause Control Frame. (See page 6.)
- DOWN Does not allow negotiation of Pause Control Frame.

3. Link Pass-Through

- UP Enables Link Pass-Through. (See page 6.)
- DOWN Disables Link Pass-Through.

4. Far-End Fault

- UP Enables Far-End Fault.. (See page 6.)
- DOWN Disables Far-End Fault.

Set the Hardware/Software Jumper

The jumper is located on the Media Converter circuit board and is labeled "H" and "S". Use small needle-nosed pliers or a similar device to set the jumper. Refer to the drawings below when setting the Media Converter for hardware or software mode.

Hardware The Media Converter mode is determined by the 4-position switch settings listed above.



Software The Media Converter mode is determined by the most-recently saved, on-board microprocessor settings.



INSTALLATION -- Continued

Set the AutoCross™ Jumper

The AutoCross™ jumper is located on the Media Converter circuit board and is labeled "D" and "E". Use small needle-nosed pliers or a similar device to set the jumper. Refer to the drawings below when setting the AutoCross™ feature on the Media Converter.

Disable

Either straight-through or crossover twisted-pair copper cable must be installed, according to the site requirements.



Enable

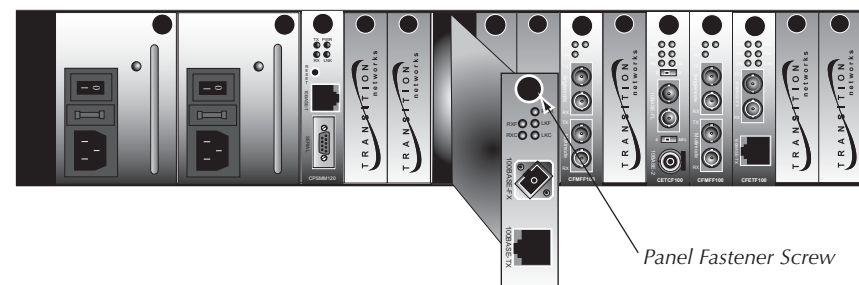
The Media Converter connects automatically to either straight-through or crossover twisted-pair copper cable.



Install the Slide-In-Module

CAUTION: Wear a grounding device and observe electrostatic discharge precautions when installing the CFETF1029-2xx Slide-in-Module Media Converter. Failure to observe this caution could result in damage to, and subsequent failure of, the Media Converter.

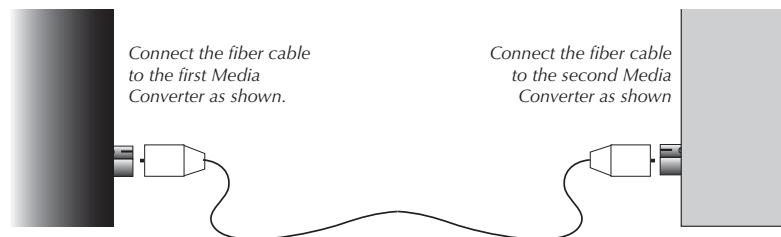
- Carefully slide the Slide-in-Module into the installation slot, aligning the Slide-in-Module with the installation guides.
- Ensure that the Slide-in-Module is firmly seated against the back of the chassis.
- Secure the Slide-in-Module by securing the panel fastener screw (attached to the Slide-in-Module) to the chassis front.



INSTALLATION -- Continued

Connect the Fiber Cable

1. Locate or build 100Base-FX compliant fiber cable with male, single-stranded Simplex connectors installed at both ends.
2. Connect the Simplex connector at one end of the cable to the single-strand fiber port on the first Media Converter.
3. Connect the Simplex connector at the other end of the cable to the single-strand fiber port on the second Media Converter.



Connect the Twisted-Pair Copper Cable

1. Locate or build 100Base-TX compliant cables, with male RJ-45 connectors installed at both ends.
2. Connect the RJ-45 connector at one end of the cable to the RJ-45 port on the CFETF1029-2xx Media Converter.
3. Connect the RJ-45 connector at the other end of the cable to the RJ-45 port on the other device (switch, workstation, etc.).



Power the Media Converter

The Slide-in-Module Media Converter is powered through the Transition Networks *PointSystem™* chassis.

OPERATION

Status LEDs

The CFETF1029-2xx Media Converter is designed to operate without user intervention. Use the status LEDs to monitor the Media Converter operation in the network.

PWR	<i>Steady</i>	(Power) Connection to external AC power.
LKF	<i>Steady</i>	(Fiber Link) A link has been established for the Fiber connection.
RXF	<i>Flashing</i>	(Fiber Receive) The Fiber connection is receiving data.
LKC	<i>Steady</i>	(Copper Link) A link has been established for the Copper connection.
RXC	<i>Flashing</i>	(Copper Receive) The Copper connection is receiving data.



Product Features

Full-Duplex Network

In a full-duplex network, maximum cable lengths are determined by **the type of cables** that are used. See page 1 (front cover) for the cable specifications for the different CFETF1029-2xx models.

The 512-Bit Rule **does not apply** in a full-duplex network.

Half-Duplex Network (512-Bit Rule)

In a half-duplex network, the maximum cable lengths are determined by the round trip delay limitations of each Fast Ethernet™ **collision domain**. (A collision domain is the longest path between any two terminal devices, e.g. a **terminal, switch, or router**.)

The 512-Bit Rule determines the maximum length of cable permitted by calculating the round-trip delay in **bit-times (BT)** of a particular collision domain. If the result is less than or equal to 512 BT, the path is good.

For more information on the 512-Bit Rule, see the white paper titled "Collision Domains" on the Transition Networks website at:

http://www.transition.com/learning/whitepapers/collom_wp.htm

OPERATION -- Continued

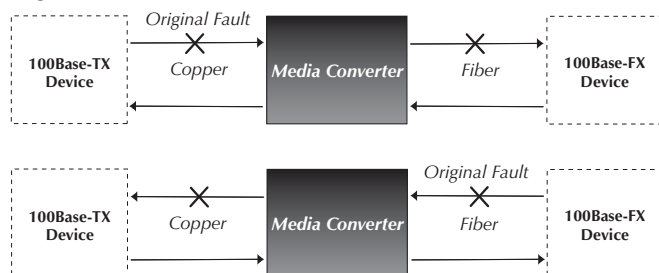
Pause Control Frame

When the Pause Control Frame feature is activated (see page 2), it allows one end of the link to signal the other to discontinue frame transmission for a set period of time, relieving buffer congestion and improving network performance.

NOTE: Both ends of a (full-duplex) Media Converter link must be able to send and receive Pause Control Frames.

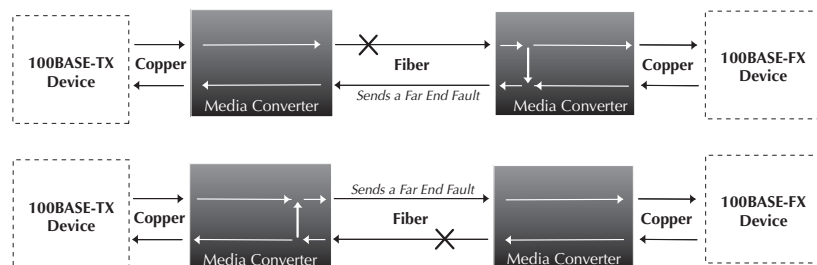
Link Pass-Through

When the Link Pass-Through feature is activated (see page 2), a fault on one side of the Media Converter stops the signal and data transmission on the other side of the Media Converter. If the Media Converter does not detect a good link on the copper side, the Media Converter disables all transmission (including active-idle) on the fiber side.



Far-End Fault

When the Far-End Fault feature is activated (see page 2), a fault on an incoming fiber link causes the Media Converter to transmit a Far-End Fault signal on the outgoing fiber link.



AutoCross™

When the AutoCross™ feature is activated (see page 3), it allows either straight-through or crossover cables to be used when connecting to 100Base-TX devices. AutoCross determines the characteristics of the connection and automatically configures the unit to link up, regardless of the cable configuration.

OPERATION -- Continued

SNMP

See the on-line documentation that comes with Transition Networks FocalPoint™ software for applicable commands and usage.

Use SNMP at an attached terminal or at a remote location to monitor the Media Converter by monitoring:

- Media Converter power
- Copper link and fiber link status
- Twisted-pair cable length
- Hardware switch settings
- Fault Condition

Also, use SNMP to enter network commands that:

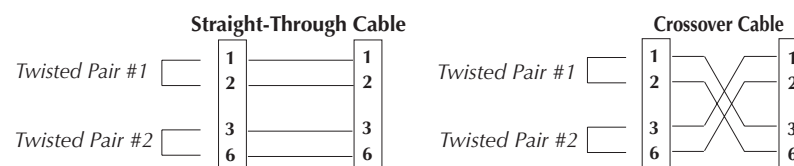
- Enable/disable Full- / Half-Duplex
- Enable/disable Link Pass-Through (LPT)
- Enable/disable Far-End Fault (FEF)
- Enable/disable Pause
- Enable/disable AutoCross™
- Power down the Media Converter

CABLE SPECIFICATIONS

Copper Cable

CATEGORY 5:

- | | |
|------------------------|-------------------------|
| Gauge | 24 to 22 AWG |
| Attenuation | 22.0 dB /100m @ 100 MHz |
| Maximum Cable Distance | 100 meters |
- Straight-Through **OR** Crossover Twisted-Pair cable may be used.
 - Shielded Twisted-Pair **OR** Unshielded Twisted-Pair may be used
 - Pins 1&2 and 3&6 are the two active pairs in an Ethernet™ network .
 - Use only dedicated wire pairs for the active pins:
(e.g., blue/white & white/blue, orange/white & white/orange, etc.)
 - Do not use flat or silver satin wire.



CABLE SPECIFICATIONS -- Continued

The physical characteristics must meet or exceed IEEE 802.3™ specifications.

Fiber Cable

Bit Error Rate:	<10 ⁻⁹	
Singlemode fiber (recommended):	9 μm	
Multimode fiber (recommended):	62.5/125 μm	
Multimode fiber (optional):	100/140, 85/140, 50/125 μm	

CFETF1029-205

Fiber Optic Transmitter Power:	min: -13.0 dBm	max: -6.0 dBm
Fiber Optic Receiver Sensitivity:	min: -32.0 dBm	max: -3.0 dBm
Link Budget:	19.0 dB	

CFETF1029-206

Fiber Optic Transmitter Power:	min: -13.0 dBm	max: -6.0 dBm
Fiber Optic Receiver Sensitivity:	min: -32.0 dBm	max: -3.0 dBm
Link Budget:	19.0 dB	

CFETF1029-207

Fiber-optic Transmitter Power:	min: -5.0 dBm	max: -1.0 dBm
Fiber-optic Receiver Sensitivity:	min: -34.0 dBm	max: -3.0 dBm
Link Budget:	29.0 dB	

CFETF1029-208

Fiber-optic Transmitter Power:	min: -10.0 dBm	max: 0.0 dBm
Fiber-optic Receiver Sensitivity:	min: -34.0 dBm	max: -3.0 dBm
Link Budget:	24.0 dB	

CFETF1029-209

Fiber-optic Transmitter Power:	min: -5.0 dBm	max: 0.0 dBm
Fiber-optic Receiver Sensitivity:	min: -34.0 dBm	max: -3.0 dBm
Link Budget:	29.0 dB	

CFETF1029-210

Fiber-optic Transmitter Power:	min: -6.0 dBm	max: 0.0 dBm
Fiber-optic Receiver Sensitivity:	min: -34.0 dBm	max: -3.0 dBm
Link Budget:	28.0 dB	

TECHNICAL SPECIFICATIONS

For use with Transition Networks Model CFETF1029-2xx or equivalent

Product is certified by the manufacturer to comply with DHHS Rule 21/CFR, Subchapter J applicable at the date of manufacture.

Standards	IEEE 802.3™
Data Rate	100 Mb/s
Dimensions	2.9" x 4.8" x 1.4" (74 x 122 x 36 mm)
Weight	8 oz (227 g) (approximate)
Power Consumption	3.5 watts, 200 mA @ 13.9 VDC
MTBF	382,956 hours (MIL217F2 V5.0) (MIL-HDBK-217F) 1,456,260 hours (Bellcore7 V5.0)
Environment	Tmra*: 0 to 60°C (32 to 140°F) Storage Temp: -20 to 85°C (-4 to 185°F) Humidity: 5-95%, non condensing Altitude: 0-10,000 feet
Warranty	Lifetime

*Manufacturer's rated ambient temperature: Tmra range for this Slide-In-Module depends on the physical characteristics and the installation configuration of the Transition Networks *PointSystem*™ chassis in which this Slide-In-Module will be installed.

CAUTION: Visible and Invisible Laser Radiation When Open. Do Not Stare Into Beam Or View Directly With Optical Instruments.

CAUTION: Use of controls, adjustments or the performance of procedures other than those specified herein may result in hazardous radiation exposure.

FAULT ISOLATION AND RECOVERY

If the Media Converter fails, isolate and correct the failure by determining the answers to the following questions and then taking the indicated action:

1. **Is the PWR LED on the Media Converter illuminated?**
NO
 - Is the Media Converter Slide-in-Module installed properly in the chassis?
 - Is the power cord properly installed in the chassis and at the external power source?
 - Does the external power source provide power?
 - Contact Technical Support: 1-800-260-1312 (Int'l: 00-1-952-7600).**YES**
 - Proceed to step 2.
2. **Is the LKC LED on the Media Converter illuminated?**
NO
 - Check the twisted-pair cables for proper connection.
 - Contact Technical Support: 1-800-260-1312 (Int'l: 00-1-952-7600).**YES**
 - Proceed to step 3.
3. **Is the LKF LED on the Media Converter illuminated?**
NO
 - Check the fiber cables for proper connection.
 - Contact Technical Support: 1-800-260-1312 (Int'l: 00-1-952-7600).**YES**
 - Proceed to step 4.
4. **Is the RXC LED on the Media Converter flashing?**
NO
 - If there is no activity on the 100Base-TX port, proceed to step 5.
 - If there is activity on the 100Base-TX port, disconnect and reconnect the 100Base-TX cable to restart the initialization process.
 - Restart the workstation to restart the initialization process.
 - Contact Technical Support: 1-800-260-1312 (Int'l: 00-1-952-7600).**YES**
 - Proceed to step 5.
5. **Is the RXF LED on the Media Converter flashing?**
NO
 - If there is no activity on the 100Base-FX port, continue below
 - If there is activity on the 100Base-FX port, disconnect and reconnect the 100Base-FX cable to restart the initialization process.
 - Restart the workstation to restart the initialization process.
 - Contact Technical Support: 1-800-260-1312 (Int'l: 00-1-952-7600).**YES**
 - Contact Technical Support: 1-800-260-1312 (Int'l: 00-1-952-7600).

CONTACT US

Technical Support

Technical support is available 7:00 AM - 6:00 PM CST (GMT -6:00)

US and Canada: **1-800-260-1312**

International: **00-1-952-941-7600**

Transition NOW

Chat live via the Web with Transition Networks Technical Support.

Log onto **www.transition.com** and click the **Transition Now** link.

Web-Based Seminars

Transition Networks provides seminars via live web-based training.

Log onto **www.transition.com** and click the **Learning Center** link.

E-Mail

Ask a question anytime by sending an e-mail to our technical support staff.

techsupport@transition.com

Address

Transition Networks

6475 City West Parkway

Minneapolis, MN 55344, USA

telephone: 952-941-7600

toll free: 800-526-9267

fax: 952-941-2322

 DECLARATION OF CONFORMITY	
Name of Mfg:	Transition Networks 6475 City West Parkway, Minneapolis MN 55344 USA
Model:	CFETF1029-2xx Series Media Converters
Part Number(s):	CFETF1029-205, CFETF1029-206, CFETF1029-207, CFETF1029-208, CFETF1029-209, CFETF1029-210
Regulation:	EMC Directive 89/336/EEC
Purpose: To declare that the CFETF1029-2xx to which this declaration refers is in conformity with the following standards. EN 55022:1994; EN 55024:1998; FCC Part 15 Class A; EN 60950 A4:1997; UL 1950; 21 CFR subpart J	
<i>I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).</i>	
 Stephen Anderson, Vice-President of Engineering	October 7, 2001 Date

COMPLIANCE INFORMATION

UL Listed

C-UL Listed (Canada)

CISPR22/EN55022 Class A & B + EN55024

CE Mark

FCC Regulations

This equipment has been tested and found to comply with the limits for a class A & B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user's own expense.

Canadian Regulations

This digital apparatus does not exceed the Class A & B limits for radio noise for digital apparatus set out on the radio interference regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class A & B prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.



CAUTION: RJ connectors are NOT INTENDED FOR CONNECTION TO THE PUBLIC TELEPHONE NETWORK. Failure to observe this caution could result in damage to the public telephone network.

Der Anschluss dieses Gerätes an ein öffentliches Telekommunikationsnetz in den EG-Mitgliedstaaten verstösst gegen die jeweiligen einzelstaatlichen Gesetze zur Anwendung der Richtlinie 91/263/EWG zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über Telekommunikationsendeinrichtungen einschliesslich der gegenseitigen Anerkennung ihrer Konformität.

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Printed in the U.S.A.

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